

Antiproton Production and Reabsorption in p+A Collisions at the AGS

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Abstract

Experiment 910, a fixed target proton-nucleus experiment performed at the Brookhaven National Laboratory AGS, recorded more than 10 million proton-nucleus interactions. Antiproton yields are presented for targets Be, Cu, and Au, and beam momenta of 12.3 and 17.5 GeV/c. In addition to target size and beam momentum, our particular handle to disentangle the antiproton reabsorption from the production is our event characterization. Events are characterized by the number of projectile collisions, determined from the number of "grey" tracks (slow protons and deuterons) in an event. Because of our large statistics and our large acceptance for slow protons, we have the unique ability to establish a relationship between the number of grey tracks and the number of projectile collisions and thus to measure antiproton production as a function of the collision geometry. By quantifying the amount of reabsorption of antiprotons within the nucleus as a function of the number of projectile collisions, we estimate the annihilation within the nucleus and compare to the free annihilation cross section. Recent results of the antilambda yield as a function of the number of projectile collisions will also be shown for comparison.
